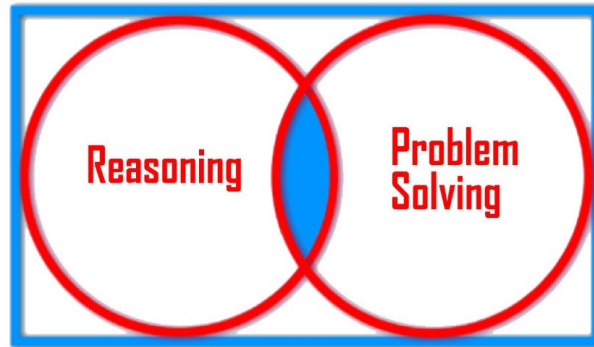


Bridging the Gap

GCSE to A – Level Transition



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Indices

(Negative, Fractional and Algebraic)

1

Simplify the following expressions as far as possible

a) $7^{\frac{1}{2}} \times 7^{-2} \times 7^{\frac{2}{3}}$

b) $3^5 \div (5^3 - 44) + 2^4 \times 2^{-6}$

c) $\frac{t^5 \times t^7 \div t^{13}}{t^8 \div t^3}$

d) $3x^3 \times 4xy^5 \times x^3y^2$

e) $\frac{6a^5 \div a^7}{a^6 \times 3a^{-3}}$

2

a) Write the following numbers in index form.

I. $\frac{1}{6}$

II. $\frac{1}{5^4}$

III. $\frac{1}{\sqrt{7}}$

IV. $\frac{1}{\sqrt[3]{9}}$

b) Write the following as a fraction or root.

I. 6^{-3}

II. $(3^2)^{-2}$

III. $(2^{-\frac{1}{2}})^3$

IV. $(x^{-\frac{1}{2}})^5$

3

a) Simplify the following fractional indices

I. $(16)^{\frac{5}{2}}$

II. $(49)^{\frac{3}{2}}$

III. $(8100)^{\frac{1}{2}}$

IV. $-(9)^{\frac{5}{2}}$

b) Simplify the following indices

I. $\left(\frac{36}{25}\right)^{\frac{1}{2}}$

II. $\left(\frac{343}{125}\right)^{\frac{2}{3}}$

III. $\left(\frac{1000}{216}\right)^{-\frac{1}{3}}$

IV. $\left(\frac{64}{27}\right)^{-\frac{2}{3}}$

5 Solve the following equations

a) $2^{3x} + 4 = 68$

b) $x^{\frac{1}{3}} = 125$

c) $(2^x)^{-5} = 128$

d) $\frac{1}{3^{2x}} = 27$

e) $6^{\frac{2}{3}x} = \frac{1}{216}$
